

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,072,290 B2
APPLICATION NO. : 10/080099
DATED : July 4, 2006
INVENTOR(S) : De et al.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

ON THE TITLE PAGE

At Item (56), OTHER PUBLICATIONS, page 2, left column, line 1, before the word “Klein,”, delete “Naja” and insert therefor --Anja--.

At Item (56), OTHER PUBLICATIONS, page 2, left column, line 12, before “UMTS L1”, delete “SMG0” and insert therefor --SMG2--.

At Item (56), OTHER PUBLICATIONS, page 2, right column, line 2, before the word “User”, delete “Sincle” and insert therefor --Single--.

At Item (56), OTHER PUBLICATIONS, page 2, right column, line 3, after the word “Processing,”, delete “Instutution” and insert therefor --Institution--.

At Item (56), OTHER PUBLICATIONS, page 2, right column, line 4, before the word “Engineers,”, delete “Lectrical” and insert therefor --Electrical--.

At Item (56), OTHER PUBLICATIONS, page 2, right column, line 16, before “p.2,”, delete “II,” and insert therefor --I,--.

At Item (57), ABSTRACT, page 1, right column, line 11, before the word “Data”, delete “fourier transform” and insert therefor --Fourier Transform--.

IN THE DRAWINGS

At FIG. 5, line 5, after the word “RESPONSE”, delete “MATICES” and insert therefor --MATRICES--.

At FIG. 6, line 5, after the word “RESPONSE”, delete “MATICES” and insert therefor --MATRICES--.

At column 1, line 59, before the word “Data”, delete “fourier transform” and insert therefor -- Fourier Transform--.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 2, line 6, after the words “chart of a”, delete “fast fourier transform” and insert therefor --Fast Fourier Transform--.

At column 2, line 64, before “SUD”, delete “a” and insert therefor --an--.

At column 6, line 59, before the word “structure”, delete “Toplitz” and insert therefor --Toeplitz--.

At column 7, line 59, before the word “function”, delete “hermetian” and insert therefor --Hermetian--.

At column 11, line 10, after the word “vector”, delete “ R_k ” and insert therefor -- R_k --.

At column 11, delete Equation 21 and insert therefor -- $R_k = \begin{bmatrix} R_1 \\ R_2 \\ \vdots \\ R_t \end{bmatrix}$ --.

At column 11, delete Equation 22, and insert therefor -- $R(k+1)d(k+1) = [H^H r]_{k+1}$ --.

At column 11, line 26, after “ $H^H r$.”, delete “ $d(k+1)$ ” and insert therefor -- $d(k+1)$ --.

At column 11, line 27, after the word “vector”, delete “ $d_1(k+1)$ ” and insert therefor -- $d_1(k+1)$ --.

At column 11, delete Equation 23 and insert therefor -- $d(k+1) = \begin{bmatrix} d_1(k+1) \\ d_2(k+1) \end{bmatrix}$ --.

At column 11, delete Equation 24, and insert therefor

-- $R(k+1) = \begin{bmatrix} R(k) & \vdots & E_k^H R_k \\ \cdots & \vdots & \cdots \\ R_k^H E_k & \vdots & R_o \end{bmatrix}$ --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 11, delete Equation 25, and insert therefor

$$-- \begin{bmatrix} R(k-1) & \vdots & E_{k-1} \mathbf{R}_{k-1} \\ \dots & \vdots & \dots \\ \mathbf{R}_{k-1}^H E_{k-1} & \vdots & R_0 \end{bmatrix} \begin{bmatrix} \mathbf{y}_1(k) \\ y_2(k) \end{bmatrix} = - \begin{bmatrix} \mathbf{R}_{k-1} \\ R_k \end{bmatrix} --.$$

At column 11, delete Equation 26, and insert therefor

$$-- \mathbf{y}_1(k) = \mathbf{y}(k-1) + y_2(k) \mathbf{E}_{k-1} \mathbf{y}(k-1) --.$$

At column 11, delete Equation 27, and insert therefor

$$-- y_2(k) = - \frac{[R_k + \mathbf{R}_{k-1}^H E_{k-1} \mathbf{y}(k-1)]}{[1 + \mathbf{R}_{k-1}^H \mathbf{y}(k+1)]} --.$$

$$\text{At column 11, delete Equation 28, and insert therefor } -- \mathbf{y}(k) = \begin{bmatrix} \mathbf{y}_1(k) \\ y_2(k) \end{bmatrix} --.$$

At column 12, line 1, after the word “Using”, delete “y(k), d(k+1)” and insert therefor --y(k), d(k+1)--.

At column 12, delete Equation 29 and insert therefor

$$-- \mathbf{d}_1(k+1) = \mathbf{d}(k) + d_2(k+1) \mathbf{E}_k \mathbf{y}(k) --.$$

At column 12, delete Equation 30 and insert therefor

$$-- d_2(k+1) = \left| \frac{(H^H \mathbf{r})_{k+1} - \mathbf{R}_k^H E_k \mathbf{d}(k)}{1 + \mathbf{R}_k^H \mathbf{y}(k)} \right| --.$$

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 12, delete Equation 31 and insert therefor -- $\mathbf{d}(k+1) = \begin{bmatrix} \mathbf{d}_1(k+1) \\ \mathbf{d}_2(k+1) \end{bmatrix}$ --.

At column 12, line 15, delete line 15 and insert therefor -- $(\mathbf{H}^H \mathbf{r})_{k+1}$ is the $(k+1)$ th element of $\mathbf{H}^H \mathbf{r}$ --.

At column 12, line 16, before “is a solution”, delete “ $\mathbf{d}(\mathbf{N}_s)$ ” and insert therefor -- $\mathbf{d}(\mathbf{N}_s)$ --.

At column 12, delete Equation 32, and insert therefor -- $\mathbf{Rd} = \mathbf{H}^H \mathbf{r}$ --.

At column 12, line 21, after the word “vector”, delete “ \mathbf{d} ” and insert therefor -- \mathbf{d} --.

At column 12, line 24, before the words “are per”, delete “ \mathbf{R}_2 ” and insert therefor -- \mathbf{R}_2 --.

At column 12, delete Equation 33, and insert therefor

$$\text{-- } \mathbf{R}(2) = \begin{bmatrix} \mathbf{R}_0 \mathbf{R}_1 \\ \mathbf{R}_1 \mathbf{R}_0 \end{bmatrix}, \mathbf{R}_2 = \begin{bmatrix} \mathbf{R}_1 \\ \mathbf{R}_2 \end{bmatrix} \text{--}.$$

At column 12, line 47, before the words “in Equation”, delete “ $\mathbf{R}_6^H \mathbf{E}_6 \mathbf{y}(k)$ ” and insert therefor -- $\mathbf{R}_6^H \mathbf{E}_6 \mathbf{y}(k)$ --.

At column 12, lines 47-48, after the word “product”, delete “ $\mathbf{R}_6^H \mathbf{E}_6 \mathbf{d}(k)$ ” and insert therefor -- $\mathbf{R}_6^H \mathbf{E}_6 \mathbf{d}(k)$ --.

At column 13, lines 4 & 5, after the word “uses”, delete “fast fourier transforms” and insert therefor --Fast Fourier Transforms--.

At column 14, delete Equation 38 and insert therefor -- $\hat{\mathbf{Rd}} + \mathbf{H}^H \mathbf{r}$ --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 14, delete Equation 39, and insert therefor -- $\hat{\mathbf{d}} = \mathbf{R}^{-1}(\mathbf{H}^H \mathbf{r})$ --.

At column 14, line 8, after the word “orthogonal,” delete “discrete fourier transform” and insert therefor --Discrete Fourier Transform--.

At column 14, line 21, after the word “Accordingly,” delete “ $\hat{\mathbf{d}}$ ” and insert therefor -- $\hat{\mathbf{d}}$ --.

At column 14, line 21, after the words “using a”, delete “fourier transform” and insert therefor --Fourier Transform--.

At column 14, delete Equation 43 and insert therefor

$$\mathbf{R}^{-1} = \frac{1}{N_s^2} \mathbf{D}^H \Delta^{-1} [\mathbf{D}(\mathbf{H}^H \mathbf{r})] \quad \text{--.}$$

At column 14, delete Equation 44 and insert therefor -- $\mathbf{D}^H \hat{\mathbf{d}} = \frac{1}{N_s} \Delta^{-1} [\mathbf{F}(\mathbf{H}^H \mathbf{r})]$ --.

At column 14, delete Equation 45a and insert therefor -- $\mathbf{F}(\hat{\mathbf{d}}) = \frac{\mathbf{F}(\mathbf{H}^H \mathbf{r})}{N_s \mathbf{F}((\mathbf{R})_1)}$ --.

At column 14, line 36, after the words “denotes a”, delete “fourier transform” and insert therefor --Fourier Transform--.

At column 14, line 37, after the word “function.”, delete “ $\mathbf{F}(\mathbf{H}^H \mathbf{r})$ ” and insert therefor -- $\mathbf{F}(\mathbf{H}^H \mathbf{r})$ --.

At column 14, delete Equation 45b and insert therefor
-- $\mathbf{F}(\mathbf{H}^H \mathbf{r}) = N_c [\mathbf{F}(h_1) \mathbf{F}(r_1) + \dots + \mathbf{F}(h_N) \mathbf{F}(r_N)]$ --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 14, line 43, after the words “Taking the”, delete “inverse fourier transform” and insert therefor --Inverse Fourier Transform--.

At column 14, Table 4, line 56, delete “ $F([R]_1) \cdot N_S \log_2 N_S$ ” and insert therefor -- $F([R]_1) \cdot N_S \log_2 N_S$ --.

At column 14, Table 4, line 61, delete “Per Burst Calculating $H^H r$ ” and insert therefor --Per Burst Calculating $H^H r$ --.

At column 14, Table 4, line 64, delete “ $F^{-1}(d) \cdot N_S \log_2 N_S$ ” and insert therefor -- $F^{-1}(d) \cdot N_S \log_2 N_S$ --.

At column 15, line 7, after the word “sampling”, delete “ r_1 is the even and r_2 ” and insert therefor -- r_1 is the even and r_2 --.

At column 15, line 8, after the words “element of”, delete “ r_1 ” and insert therefor -- r_1 --.

At column 15, line 10, after the words “element of”, delete “ r_2 ” and insert therefor -- r_2 --.

At column 15, line 14, after the word “matrix”, delete “ r_{eff} ” and insert therefor -- r_{eff} --.

At column 15, delete Equation 48 and insert therefor -- $r_{eff} = H_{eff} d + n$ --.

At column 15, delete Equation 49 and insert therefor --
$$F(d) = \frac{F(r_{eff})}{F((H_{eff})_1)} \quad --.$$

At column 15, line 34, after the words “Using the”, delete “inverse fourier transform” and insert therefor --Inverse Fourier Transform--.

At column 15, line 42, after the word “modified”, delete “ d ” and insert therefor -- d --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 15, line 43, before the words “The H”, delete “ \tilde{d} ” and insert therefor -- \tilde{d} --.

At column 16, delete Equation 50 and insert therefor -- $F(\tilde{d}) = \frac{F(\mathbf{r})}{F((\sim H)_1)}$ --.

At column 16, line 35, after the words “value from”, delete “ \tilde{d} ” and insert therefor -- \tilde{d} --.

At column 16, line 36, after the word “codes,”, delete “d” and insert therefor --d--.

IN THE CLAIMS

At claim 1, column 17, line 5, after the words “and a”, delete “fourier transform” and insert therefor --Fourier Transform--.

At claim 4, column 17, line 15, after the word “determining”, insert --of--.

At claim 4, column 17, line 16, after the words “uses a”, delete “fourier transform of a hermetian” and insert therefor --Fourier Transform of a Hermetian--.

At claim 5, column 17, line 19, after the word “determining”, insert --of--.

At claim 5, column 17, line 20, after the words “uses of”, delete “fourier transform” and insert therefor --Fourier Transform--.

At claim 6, column 17, line 23, after the word “column”, delete “fourier transform” and insert therefor --Fourier Transform--.

At claim 7, column 17, lines 25-26, after the words “wherein the”, delete “fourier transform is a fast fourier transform.” and insert therefor --Fourier Transform is a Fast Fourier Transform.--.

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At claim 8, column 17, lines 28-29, after the words “uses an”, delete “inverse fast fourier transform” and insert therefor --Inverse Fast Fourier Transform.--.

At claim 9, column 18, lines 9-10, after the words “and a”, delete “fourier transform” and insert therefor --Fourier Transform.--.

At claim 12, column 18, line 20, after the word “determining”, insert --of--.

At claim 12, column 18, lines 21-22, after the words “uses a”, delete “fourier transform of a hermetian” and insert therefor --Fourier Transform of a Hermetian--.

At claim 13, column 18, line 25, after the words “uses a”, delete “fourier transform” and insert therefor --Fourier Transform--.

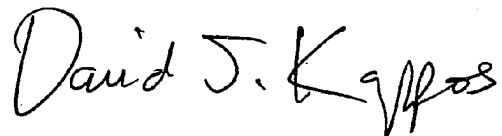
At claim 14, column 18, line 29, after the word “column”, delete “fourier transform” and insert therefor --Fourier Transform--.

At claim 15, column 18, lines 31-32, after the words “wherein the”, delete “fourier transform is a fast fourier transform” and insert therefor --Fourier Transform is a Fast Fourier Transform--.

At claim 16, column 18, lines 34-35, after the words “uses an”, delete “inverse fast fourier transform” and insert therefor --Inverse Fast Fourier Transform.--.

Signed and Sealed this

Eighth Day of September, 2009

A handwritten signature in black ink that reads "David J. Kappos". The signature is written in a cursive, flowing style with a large initial 'D' and a stylized 'K'.

David J. Kappos
Director of the United States Patent and Trademark Office